"Exact Values" Problems

1. ***Calculate each of the following:***
   a. $\sin 45°$
   b. $\cos 60°$
   c. $\cos 30°$
   d. $\sin 60°$
   e. $\sec 45°$
   f. $\cot\ 30°$
   g. $\tan 30°$
   h. $\csc 60°$
   i. $\cot 45°$
   j. $\sec 30°$
   k. $\csc 45°$
   l. $\cot 60°$

2. ***Calculate each value:***
   a. $\cos 225°$
   b. $\sin \frac{2\pi}{3}$
   c. $\tan(-\frac{5\pi}{6})$
   d. $\sec(-\frac{\pi}{6})$
   e. $\cot 330°$
   f. $\csc \frac{4\pi}{3}$

3. ***Calculate each of the following:***
   a. $\tan 390°$
   b. $\cos\left(-\frac{8\pi}{3}\right)$
   c. $\tan 510°$
   d. $\csc(-\frac{11\pi}{4})$
   e. $\cos(\frac{13\pi}{3})$

4. ***Calculate each of the following:***
   a. $\cos 45° \sin 225° + \cos 330°$
   b. $\csc \frac{2\pi}{4} \sin(-\frac{2\pi}{3}) \cot \frac{5\pi}{4}$
   c. $\tan^2\frac{5\pi}{4} - \sin \frac{\pi}{3} \cos \frac{\pi}{6}$
   d. $\cot\frac{3\pi}{4} \sec \frac{5\pi}{6} - \sec \frac{3\pi}{4} \cot \frac{5\pi}{6}$

5. For each of the following $0 \leq \theta \leq 2\pi$. Find possible values of θ.

a. $\cos\theta = \frac{\sqrt{3}}{2}$

b. $\sin\theta = -\frac{1}{2}$

c. $\cot\theta = 1$

d. $\csc\theta = -\sqrt{2}$

Answers:

1. $a.\frac{1}{\sqrt{2}}\ b.\frac{1}{2}\ c.\frac{\sqrt{3}}{2}\ d.\frac{\sqrt{3}}{2}\ e.\sqrt{2}\ f.\sqrt{3}\ g.\frac{1}{\sqrt{3}}\ h.\frac{2}{\sqrt{3}}\ i.1\ j.\frac{2}{\sqrt{3}}\ k.\sqrt{2}\ l.\frac{1}{\sqrt{3}}$
2. $a.-\frac{1}{\sqrt{2}}\ b.\frac{\sqrt{3}}{2}\ c.\frac{1}{\sqrt{3}}\ d.\frac{2}{\sqrt{3}}\ e.-\sqrt{3}\ f.-\frac{2}{\sqrt{3}}$
3. a. $\frac{1}{\sqrt{3}}\ b.-\frac{1}{2}\ c.-\frac{1}{\sqrt{3}}\ d.-\sqrt{2}\ e.\frac{1}{2}$
4. $a.\frac{-1+\sqrt{3}}{2}\ b.-\frac{\sqrt{3}}{2}\ c.\frac{1}{4}\ d.\frac{2\sqrt{3}-3\sqrt{6}}{3}$
5. $a.\frac{\pi}{6},\frac{11\pi}{6}\ b.\frac{7\pi}{6},\frac{11\pi}{6}\ c.\frac{\pi}{4},\frac{5\pi}{4}\ d.\frac{5\pi}{4},\frac{7\pi}{4}$